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Improving the Integration of Funding Priorities within the Decision-Making Processes of Domestic Retrofits in Scotland

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ABSTRACT

There is a requirement to address the needs of the most at risk individuals in society through robust policies designed to improve the energy performance of buildings and safeguard the wellbeing of the elderly from the known vulnerabilities of their immediate and surrounding environment. Due to reduced funding and the misalignment of priorities there is a need to evaluate the quality control within government retrofitting standards and processes to prevent unintended consequences. It is recognised that due to the complexity of the agenda, holistic integration across a range of service providers is required. In response this research examines the relationships between design and implementation within real-world practice to determine and understand the appraisal procedures in housing and any consequences that arise. This research presents the findings of a preliminary study, where research was conducted through a series of in-depth interviews conducted with key stakeholders within government, social care and the retrofit industry, exploring the extent to which the requirements of an older person's health and wellbeing are holistically being addressed during the retrofit of domestic buildings. The study concludes by posing a series of research questions, providing an agenda for future research and presents a synthesis of insights on practical and policy implications originating from the analysis on decision-making and management.

INTRODUCTION

Domestic energy use represents 30% of total energy use in the UK, making it essential in achieving national carbon reduction targets (Sharpe and Shearer, 2012). Housing holds a fundamental relationship to physical and mental health; creating either long-term security or insecurity for the resident. However, the lack of decent dwellings is recognised as a key future challenge to the economy, environment and society of the UK (DCLG, 2006). This deficit is particularly important due to economic growth and advances in health care, meaning people are living longer than ever; with 25% of the population in Europe expected to be over 65 by 2020 (Boerenfijn et al. 2018). In Scotland, the devolved government has set ambitious carbon reduction targets and drastic action is required, presenting the challenge of achieving this whilst preventing unintended consequences. Therefore, there is a need to examine the expertise and processes surrounding Scottish Government retrofit programmes to determine the effects of the current retrofit agenda on the health and wellbeing of the elderly. Presented are the findings on the analysis of nine key stakeholders' expert views through a constructivist grounded theory approach to determine the short comings of

funding cuts and requirements for a holistic approach within governance for the retrofit agenda. The findings from this study will establish research questions which will provide the foundation for future research in this area.

LITERATURE REVIEW

The need for retrofit

Over 21 million dwellings in the UK were built before 1980, therefore the majority of housing stock pre-dates energy efficiency standards; creating widely non-decent living standards across the UK. The role of dwellings in reaching ambitious climate change targets and protecting the wellbeing of the vulnerable should not be underestimated, with an estimated 70% of the existing housing stock still in use by 2050 (Fylan et al., 2016). Furthermore, in addition to having one of the most inefficient housing stocks in Europe, the UK has the highest number of householders in fuel poverty at 11% in 2014 (Gupta and Gregg, 2018). However, fabric energy efficiency retrofits have the potential to deliver 60% reduction in CO_2 emissions, but require an estimated expenditure of approximately £200 billion. Although a substantial investment, this is seen to be one of the most cost effective solutions, and the prioritised approach by the government to decarbonisation (Davies and Oreszcyn, 2012).

The importance of housing

Most of human life is spent in buildings. This is particularly imperative to the elderly population whom are estimated to spend 70-90% of their time at home. Therefore, the level of value attributed to the built environment with regards to human health and happiness should not be underestimated. However, this does not mean that all experiences are positive. Housing is one of the most fundamental conditions that determine living standards such as quality, comfort and wealth and is considered imperative for achieving sustainable development goals (Saldaña-Márquez et al, 2018). The housing sector requires great levels of attention, not only because of its economic and ecological importance, but also due to its enormous social value; impacting social cohesion, trust, a sense of belonging, and therefore, the wellbeing of the population. Moreover, maintaining a warm home is considered a basic need, and the inability to uphold this can have negatively impact mental and physical health (Bullen and Kearns, 2008).

Ageing population

The rationale for focusing on the elderly arises from both policy and research. Within the UK's fuel poverty strategies, the elderly, alongside the disabled and low-income families, are recognised as the most vulnerable within society. The political and public dialogue surrounding fuel poverty has primarily focused on older people, with more policy instruments targeted within this group (Gillard et al., 2017). Furthermore, the elderly have become the 'hallmark' of the extreme fuel poor, due to higher heating requirements and declining incomes (Walker et al., 2017). Maintaining a healthy ambient environment can be challenging. Whilst the poorest individuals are the most susceptible to fuel poverty, they have the least resources or power to invoke the necessary change (Krieger and Higgins, 2002). Moreover, poor housing conditions have been greatly associated with mental health issues resulting in problems such as social isolation ensuing from reluctance to hold social gatherings due to feelings of embarrassment or helplessness (Bullen and Kearns, 2008). There is a need for older people to invest in, understand and trust energy saving initiatives,

allowing them to become empowered and informed in their decision-making whilst acting as a preventative and defensive method against fuel poverty (Walker et al., 2017).

Ensuring quality in retrofit practice

Given the level of public investment in housing, it is vitally important that building performance is systematically evaluated throughout the retrofit process to both the national climate change agenda and the everyday lives of people. Building Performance Evaluation is crucial in assessing palpable evidence of the building performance and in identifying the factors leading to actual consumption (Sharpe, 2012). However, it is increasingly evident that when evaluation occurs, there is a substantial gap between predicted and actual energy use; potentially significantly undermining carbon reduction targets and timelines within public policy (Sharpe and Shearer, 2014). The post hand-over period is often neglected and seen as a nuisance, with many not having an appetite for or lacking the funding required to learn about how the building performs in-use. However, learning how buildings perform is essential within the systematic improvement of the energy sector (Way and Bordass, 2005). Furthermore, Post Occupancy Evaluation (POE) is often regarded with suspicion and hostility, creating friction amongst stakeholders (Meir et al., 2009). Nonetheless it is one of the fastest and more predictable sources to improve the environmental and economic performance of the built environment, whilst achieving greater user satisfaction (Meir et al., 2009). This fragmentation has stunted POE development. However national and local government should be promoting greater design and building practice, reducing rework and revisits, whilst increasing commercial intelligence for future use.

Known consequences of retrofit

Without rigorous quality assurance methods, unintended consequences can arise from the retrofit of homes. Within the UK's Health Housing and Safety Rating System overheating is one of the defined hazards, with high temperature increasing cardiovascular strain and trauma and increasing the risk of stroke and mortality. Whilst overheating can be minor to some, the risks are greatly increased for vulnerable groups such as the elderly. There is a growing awareness that overheating is a significant problem, which will increase with a warming climate and a move towards greater energy efficient buildings (Morgan, et al., 2015). As a resolution to this, Mechanical Ventilation with Heat Recovery (MVHR) have been installed within many domestic buildings. MVHR can influence air quality, moisture load and temperature. However, as a relatively new technology there have been issues with design, installation, commissioning and use (Foster et al., 2016). Whilst there are benefits to using this system, it is crucial that there is careful design, maintenance and user-interaction as misuse presents a tangible risk to the quality of the ambient environment, the health of the resident and a potential increase in energy consumption (Sharpe and Shearer, 2012). Internal Air Quality (IAQ) is a vital component, but often neglected. Achieving IAQ is crucial for health and wellbeing and can result in detrimental energy performance from users misunderstanding of systems, such as the opening of windows or shutting off systems due to noise (Sharpe, 2012). An absence of adequate ventilation can result in detrimental effects such as mould growth and toxin build-up resulting in fatigue and respiratory problems. Moreover, it encourages a proliferation of microorganisms and house dust mite populations (Way and Bordass, 2005). The lack of engagement and understanding between occupants and their ventilation systems poses a great risk upon health, which must be address through

design and legislation. This lack of coordination between those implementing these changes and the individuals living in altered environments displays a key problem, one which must first be tackled at governance level through improved decision-making, then implemented throughout the system to create a holistic approach to domestic retrofit practice.

Governance and retrofit

Historically, building regulations focused on the health, safety and welfare of building occupants, emerging in response to widespread illness and death due to unsanitary conditions and significant hazardous events (Meacham, 2016). Building regulations have been the primary mechanism to affect change within the standards surrounding the built environment. Although these standards have significantly developed over recent years, it is evident that this is not being translated into tangible energy savings. Furthermore, building regulations focus primarily on new build construction, not upgrading the existing building stock. Existing buildings have a significantly worse energy performance than new builds and are not subjected to the same regulatory requirements (Sharpe, 2012). This fragmented regulatory approach has led to unpremeditated consequences such as health hazards from flammability of thermal insulation materials, as witnessed in the Grenfell disaster in London in 2017. The challenges facing the health and wellbeing of the population are intensified when addressing existing building stock due to the reduced regulatory oversight and economic capacity of the sector (Meacham, 2016). Therefore, due to the complexity of delivering this agenda, there is a need to investigate the decision-making and quality assurance within government retrofit, which target the most vulnerable of individuals within society to determine the impacts of funding cuts on the population receiving energy efficient improvements within their homes.

METHODOLOGY

The aim of this study is to explore the extent to which funding cuts within government retrofit programmes impact the health and wellbeing of an ageing population under a constructivist grounded theory approach. This research takes an exploratory approach to understanding with a view to allowing compilation of recurrent interpretations and data to help shape later stages of research.

METHODOLOGICAL APPROACH

Grounded theory is defined as the inductive conceptualisation of data through a systematic, constant comparative method of simultaneous data collection and analysis to establish theory (Charmaz, 2014; Glaser and Strauss, 1967). In selecting which variation to use, the philosophical and practical approach of both classical and constructivist grounded theory were considered for this research. Classical grounded theory is often defined as positivist; seeing the researcher as impartial from the participants (Glaser and Strauss, 1967). Conversely, within constructivist grounded theory, the researcher is central with their participation and seen across data collection, analysis and theory construction creating a relativist and pragmatic approach towards the methodology (Charmaz, 2014). Within classical and constructivist, data collection and analysis are systematic and iterative, limiting theory generation until themes and relationships are developed (Charmaz, 2014; Glaser and Strauss, 1967). In classical grounded theory the use of literature was utilised only after completing analysis to prevent contamination of research findings and reduce influences and creating preconceptions. Contrastingly, Strauss and Corbin (1990) argued for professional literature to be reviewed before data collection begins and throughout analysis

and theory generation, however the researcher was to remain objective, whilst Charmaz (2014) saw an abductive process where the research becomes active. Where constructivist grounded theory seeks active participation in interviews, classical considers involvement as a disturbance, using analysis and theoretical sampling as platforms for exploration (Glaser and Strauss 1967). When grounded theory is combined with a constructivism paradigm, it embraced the existence of multiple individual realities, ensuring meaning is co-constructed to produce an interpretation adept in explaining these realities. Having considered both approaches and the requirement for philosophical compatibility between researcher and methodology, constructive grounded theory was selected. Firstly due to its abductive reasoning, creating a logical inference to find the most likely explanation from data presented. Secondly, the interaction between researcher and participant suited the researcher's approach having had experience working within the energy industry; restricting bias. Finally, constructivist allows greater flexibility, with a more literary writing style whilst upholding the analytical process of formal research.

Approach

In line with the methodology, sampling was purposeful. In total 9 industry experts gave written consent to participate; their demographic details are shown in Table 1. The initial participant was selected for their experience and ability to reflect on the interconnections between different retrofit practice in Government. In line with constructivist grounded theory, theoretical sampling began when early concepts and categories emerged, with adaptation of interview questions and adding additional participants to explore gaps in the developing categories (Charmaz 2014).

Table 1: Interview participants

Code	Gender	Stakeholder	Position
C1	Female	Energy	Area Based Scheme Researcher
C2	Female	Health	Nurse
C3	Male	Government	MSP
C4	Male	Energy	Eco Support Manager
C5	Male	Built Environment	Architect
C6	Female	Built Environment	Housing Association Manager
C7	Male	Government/Energy	MP
C8	Male	Energy	Director at Energy Action Scotland
C9	Male	Government/Health	MSP

Data was collected through one to one in-depth interviews. An interview guide containing questions and probes was created to guide the conversation and ensure it remained focused and a neutral approach was adopted, ensuring no leading questions were asked. Each interview began with the same opening question, "*What do you believe are the biggest issues facing housing with an ageing population?*". Initial interviews were open and free-flowing to give participants the freedom to discuss their experiences, with follow-up questions asked when showing statements were made that required further analysis. Later interviews were driven by data analysis and theoretical sampling to expand categories and

relationships between them. The interview transcripts were coded word-by-word, then line-by-line, using gerund verbs to stay close to the data (Charmaz 2014). Initial coding involved categorising each line of the written date and initial codes were integrated and refined to develop concepts, categories and sub-categories. Focused coding involved analysis of the most significant or frequent previous codesThroughout this process, theoretical memoing was undertaken, enabling theoretical development and deeper understanding of the data.

DATA ANALYSIS

From analysis, four key themes arose: 'misaligned decision-making', 'removing responsibility', 'creating a holistic service' and 'the need for change' which will be discussed throughout this section. The relationship between these categories present the overarching theme of 'governmentality' with challenges presented by misaligned priorities and poor decision-making impacting negatively on the success of retrofit programmes and impacting the health and wellbeing of an ageing population.

Misaligned decision-making

Ignoring vulnerability

Within different levels of governance and the energy sector, there is a view that the selection of individuals for support is inadequate and misaligned with the goals of protecting those most vulnerable. C3 MSP, begins this dialogue stating, "*all the resources and the low hanging fruit being plucked; chosen by government in dealing with cities and towns first*". This statement refers to the choice between supporting urban and rural areas; the most convenient and inexpensive areas are selected first to receive support, regardless of the known disadvantages faced within rural locations. Those who are most at risk from isolation and affordable warmth are often forgotten due to disinclination of contractors and increased cost for governance in its application. Exploring this issue in greater depth, C4 Eco Mgmt discussed the economic decisions made which often forsake the most vulnerable due to restrictive qualification criteria for support, "*you have someone on the saving elements of pension credit, they are not much above income support but don't qualify for schemes…it is the whole poverty trap thing, where you are £10 over and have to then pay thousands for insulation measures…the funding is about supporting people who are very vulnerable and they don't…they just miss out*". This statement highlights the difficult in balancing decision-making within funding and support allocation; there is no flexibility or discussion of the struggles faced by the elderly which can often result in people already facing challenging living conditions being forced into or allowed to continue to suffer due to a flawed scheme which limits individuals based on numerical values.

Removing responsibility

Disengaging the public

Those applicable for support still face the problem of misunderstanding existing processes and information, resulting in a lack of empowerment and engagement, as deliberated by C3 MSP, "*not everyone has taken up offers of help…there are so many unwanted phone calls…they don't listen to them and they definitely don't take it in…people can get five of these calls a day, they are unsolicited and it is enough to keep people away from doing it*". This is reiterated by C7 MP who states, "*there is a lot of good trade bodies working to*

improve that but for the ordinary man or woman, finding their way through the maze is often quite difficult…and what is a trusted source?" These statements display a key misunderstanding on how to appropriately reach out to individuals. With a plethora of different retrofit programmes available, it cuts off engagement and can deter those most in need from receiving the support they require due to a feeling of being overwhelmed. There is a requirement for a guided approach, catered to the needs of different age groups, which appropriately targets them rather than a bombardment of information and communication.

Unsupportive support services

Furthermore, with the complexities of retrofit, there is a need for increased education and more information to improve understanding of how to live with the improved housing conditions. However, currently this does not occur, as stated by C8 EAC Director, "*people are left to their own devices, we might show how to set-up a time but that's it…they will get the meter sorted whilst the person watches, then they will go 'thank you', 'was that ok?' and then leave but there is nothing to check their understanding*". This illustrates that the problem is known, but energy bodies don't have the capacity to combat these problems; there must be a structural change throughout, instigated by government, to ensure there is thorough, easily understood and aptly delivered education post-installation. However, there is a differing view within government, arising from an ideological view surrounding the care of the elderly and communication of information, displayed by a Conservative MP, C7, stating, "*families are needing to identify the risk, family can maybe resolve the risk. Everything shouldn't be burdened to the state, but there are people who have no family and maybe they need a wee bit extra attention*", however an SNP MP, C9, had an opposing viewpoint commenting, "*The government obviously has a huge role to play and it is its job to make sure all this stuff is set in place…of course your family has a role to play…they are often as much victims of the situation as the individuals are*". The conflicting assessments present a clear opposition between the UK and Scottish government about how to care for their most vulnerable residents, however there is a fundamental need to educate the general public in order for self-reliance can viably occur and to reduce cost upon the state.

Disconnect within government programmes

Furthermore, there appears to be a lack of knowledge and understanding amongst the different government programmes as to what they do and how they interlink. This can be seen from C1 ABS saying, "*there is a system designer for each project, so there will be specifications and things within that of how things should be done properly em…you might be better talking to [colleague] about that because it's his job*" and is further reiterated when asked about collaboration with the health sector, "*there might be, in Home Energy Scotland there is other funding schemes I don't know anything about so again you would be better speaking to them*". These statements display an absence of procedural knowledge and communication, regardless of the close proximity from either within the same room, office or general knowledge of how the different programmes run. Rather than engaging fully with the projects, and engaging with their colleagues, there is an aversion of responsibility onto others which could potentially result in detrimental impacts on those receiving support. Further, an unwillingness to communicate and collaborate with individuals within different projects, limits the capacity for external bodies to do the same and fully engage with the agenda.

Creating an holistic service

Enshrining the importance of energy amongst public and stakeholders
The importance of retrofitting cannot be diminished, cutting across government departments and impacting housing and health agendas, although this connection is not always fully understood. However, this connection must be enshrined within society to protect the health and wellbeing of the elderly. The importance of this can be understood within C5 Architect's analysis, "*news comments about the winter health care crisis which is in part due to people discharged from hospital and returning back too soon because the housing conditions they are returning to are aggravating the very thing they were first admitted to hospital to be treated for*". There is potential for a significant impact from collaboration between health and housing to monitor energy improvements, as C6 HA mgmt states, "*there needs to be communication, tenants coming out of hospital, being discharged… we don't know they were in hospital, I wouldn't expect nurses to phone every single landlord but we could help and I think everywhere you go everyone would say the same thing*". If there was a system in place allowing communication, change could occur, better preparing them for the needs of the vulnerable. With social housing identified as a preliminary model for change, with its greater supply of resources in contrast to the private sector, it allows further financial consideration for future widespread partnership.

Creating a holistic approach within government services
Preferably, when retrofitting the entire dwelling should be inspected and amended to the individuals requirements. However, due to restrictive funding and guidelines the support available can be incredibly constrictive as C1 ABS states, "*the way HEEPS ABS runs misses the whole house approach, particularly in cases where you insulate the walls of the house but the windows are rubbish so heat still escapes…the funding doesn't allow for things like that to be taken into account, it should be factored in but we obviously don't have the budget*". It is disconcerting that problems can be witnessed and ignored, creating potential performance gaps and negatively impacting health and personal economics due to restricting guidelines and budgets. Furthermore, by allowing wider changes when visiting a property it can have a long-term economic advantage as C4 ECO comments, "*if you are looking to future proof against future standards you want to go beyond the current EESH, you want to move beyond one incremental measure, looking at all elements together…there is a cost effectiveness around that*". This statement enforces the acceptance of failures within planning from government retrofits, with incremental modifications and overlooking known problems resulting in re-visitation and potentially negatively impacting government targets. It is apparent that there must be a holistic approach investigating all problems, not solely to create cost savings but for the health and protection of the environment.

The need for change

Improving quality
There is a debate surrounding the effectiveness of existing building regulation and domestic energy rating systems, and the known ability to cut corners to achieve sufficient grading's, as C4 ECO states "*when you are doing external wall measures you don't necessarily need to cover the whole external wall to meet the rating required… you have EESH and SAP targets met but when you actually look at the quality of install there is no way that wall is actually*

achieving the standard of U-value it says" and is reinforced by C9 MSP, "*a lot of schemes that were set up by the UK government, there were a lot of holes in the way that was organised, so we've had a lot of issues with unscrupulous businesses taking advantage of people and putting in wall insulation that hasn't properly been through building control*". These statements display the understanding within government and the energy sector that current systems in place are ineffective and inadequate, and contractors are not performing appropriately. There is a necessity for greater quality assurance methods and inspection of work being carried out during a retrofit, to prevent unintended consequences, which is further strengthened by C8 EAC, "*the regulations and testing are not fit for purpose, we need a good testing regime to ensure energy efficiency and warmer homes will not be subjected to the tragedy that Grenfell befell… with Grenfell they made a safe building, unsafe*" showing the extent of this problem and the drastic impacts that can occur from a lack of inspection, and empowerment of the wrong individuals. There must be a robust, consistent and continual inspection process throughout work and post-handover period to ensure the highest level of quality and guarantee the protection of the health of the elderly.

Discussion

The retrofit of existing building stock holds a unique position in its ability to address various social, economic and environmental objectives. There is a need to ensure this practice is progressive and coordinated in order to protect the health and wellbeing of the population. The concept of governmentality proposed by Michel Foucault is used to analyse and examine the strength of actions and influences that underline the decision-making process within Scottish Government retrofit programmes. The triple bottom line of sustainability must be considered to create customer and stakeholder satisfaction. However this is not always implemented in practice, with economic performance often outweighing the importance of social and environmental. Therefore the justification of sacrificing environmental and social welfare to create and improve economic performance of the state must be examined (Gong et al., 2018). There are diverse combinations within governance which define policy agenda which at times compete and at others combine within a collaborative approach. 'Multiple governmentalities' outlines four typologies describing governmentality. Firstly, a disciplinary form in which the population are directed to particular selected norms and values by means to create self-regulation (Foucault, 1997). Secondly a sovereign form, where compliance is sought from top-bottom commands and is reinforced by the threat of punishment. Thirdly, a neoliberal form which will "*act on the environment and systematically modify its variable*" rather than direct subjugation of the people, and finally the governmentality of truth; the truth of religion, revelation and the natural order of the world (Foucault, 2008). However, in reality these contradicting philosophies of government often intertwine and challenge one-another. The state is confronted with the difficulty of maintaining the population's wellbeing and the conflicting view that the state should be austere, constantly pursuing ways to limit its activities to reduce cost and increase independence. The purpose of government is the welfare of the population, the improvement of its conditions and the increase of its wealth, longevity and health (McKinlay and Pezet, 2010). Centred upon population statistics, governmentality recognises that the state's success is measured by its ability to influence the behaviour of the population to improve the welfare of the people. The state justifies these actions by defining them as a mean to expand freedom, beyond the state (Foucault, 1991). However, if retrofit practice is disjointed within its structures and has misaligned decision-making

governing it, it prevents useful and accessible knowledge share. If power is held by the people, then they must be empowered to create independence and yield control of their own wellbeing. Furthermore, Foucault claimed that the 'power-knowledge' concept within governmentality diffused outwards from the institutions it was formed by, however if the top lacks the vital knowledge required, then it cannot feasibly trickle down to the bottom (Armstrong, 2015). The top must take ownership, and invest in systems to allow this knowledge share otherwise the neoliberal approach fails and results in greater levels of economic output and suffering of the population; therefore a failure of state. There is an ethical obligation to look after the most vulnerable within society and a key aspect of this discussion is the decision-making surrounding the health of the elderly. Whilst there is a need for the right to autonomy and self-determination, there is a requirement to recognise the network of individuals that negotiate decision-making which removes responsibility from the individual (Carter, 2003). Often vulnerability, and the difficulties faced with understanding complicated technical information dictates that there must be a restructuring of sources and channels to outlay knowledge to create greater accessibility and widespread comprehension. This includes not only the positives of retrofitting, but potential unintended consequences; creating fundamental behaviour change to permit intrinsic change; improving health, economy and the environment (Hicks et al, 2012). Moreover, Foucault (1982) believed that power may be exercised by collective interests rather than individuals or institutions. This approach argues that power is exercised by people and groups who seek similar results from a common point of interests. Whilst these interests may not always share a common value base, they can share interest in securing a specific outcome such as fuel poverty reduction or greater wellbeing within an ageing population (Clearly and Hogan, 2016). Retrofit practice is highly complex and requires coordination across government, public services and the supply change. Furthermore, the regulation of market involves a number of complex decisions regarding the economy, society and technical regulation; all of which impact the environment. In order to create highly coordinated agreements and processes in place, there must be extensive consultation and information exchange amongst a variety of stakeholders (González, 2017). However, the approach in existence is clearly fragmented. With such complex procedures in place from planning, implementation to post-completion inspection, there is a need for a greater support network which interlinks and creates inclusion throughout; empowering individuals in every level to protect the health and wellbeing of the most vulnerable in society and creating a realignment from profit to people.

CONCLUSION

There is a need for greater collaboration and communication amongst national retrofit programmes and agendas to protect the health of the elderly, preventing unintended consequences. The retrofit of domestic housing is centred around the concept of sustainability; however the ideological prioritisation of economy over people has created an increased pressure on resources, favouring ease and cost cutting over communication, collaboration and efficiency. There is a severe lack of integration and partnership working amongst the government, different retrofit programmes and the people. This absence of understanding amongst programmes of the immediate and wider picture creates substantial barriers and prevents meaningful knowledge share between external bodies and the people. Investment and an altered mind-set from existent neoliberal values are required; initial outlay of economy and time creates a larger investment in the country and

will result in the confidence of the population being able to have greater self-reliance, but first there must be resources in place to make this feasible. Social housing and its greater resources and organisation is within prime position to become the forefront of change and sustainable housing whilst creating meaningful change for the most vulnerable. However, there must be a willingness to change and to holistically review the processes in place and resultant implications. Therefore creating a sustainable national retrofit programme that protect the most vulnerable and diminish the impacts of climate change.

Key areas of future research include the exploration of policies and regulations in place to monitor the decision-making of quality assurance of domestic retrofits and the barriers within these; allowing understanding of deep-rooted problems and the impacts created on the energy and constructions sectors, as well as the health of the population. Additionally, there is a need for significant mixed-method and multi-level exploration that combines large scale analysis of the processes within decision-making from policy development to the iterative inspection process over a long period of time. Further investigation and a comparison is also required of retrofit agendas within Scotland and the UK. This will help determine best practice in place and how the differing political ideologies impact the success of the initiatives and the wellbeing of population across the different countries within the union.

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